Amendments to the Drawings:

The attached sheets of drawings include changes to Figs. 2 and 3 to indicate that they depict Prior Art. Replacement sheet 1 includes Figs. 1 and 8 and replaces informal drawing sheets Figs. 1 and 5. Replacement sheet 2 includes Figs. 2 and 3 and replaces informal drawing sheet 2. Replacement sheet 3 includes Figs. 4 and 5 and replaces informal drawing sheet 3. Replacement sheet 4 includes Figs. 6 and 7 and replaces informal drawing sheet 4.

Attachment: Replacement Sheets 1-4

REMARKS

In paragraphs 1 and 2 of the Office Action Applicant's election without traverse of group I, claims 1-12 and 21-27, in the reply filed on April 24, 2006, is acknowledged. Claims 13-20 are withdrawn from consideration as drawn to a non-elected invention. Applicant concurs.

In paragraphs 3 and 4 of the Office Action it is indicated that the drawings received on June 8, 2004 are not acceptable. Responsive hereto, Applicant has herewith submitted formal drawings with replacement sheets clearly designated. Additionally, in paragraph 4 of the Office Action it is indicated that Figs. 1-3 should be designated as Prior Art. Responsive hereto, Applicant has designated Figs. 2 and 3 as Prior Art. However, Fig. 1 is a disk drive that includes a magnetic head of the present invention, as set forth in the Specification on page 4, lines 10-11 and page 5, lines 4-5. Therefore, Fig. 1 is not labeled as Prior Art. Additionally, Fig. 1 has been amended such that the magnetic head is identified with the numbers 118, 140 and 260 of the embodiments of the magnetic head of the present invention as described throughout the Specification.

In paragraph 5 of the Office Action the title of the invention is objected to as being not descriptive. Responsive hereto, Applicant has amended the title to read "MAGNETIC HEAD HAVING HEAT SINK STRUCTURE". The Examiner's review and approval of the amended title is requested.

In paragraphs 6 and 7 of the Office Action claims 1-6, 11-12, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al (US Pat. No. 6731461 B2), stating:

> "As recited in independent claims 1 and 21, Yamada et al show a magnetic head comprising: a write head portion (upper portion in Fig. 5) including a first magnetic pole (24, for example) and a second magnetic pole (20, for example); an induction coil 22 being disposed at least in part between said first and second magnetic poles; an electrical lead of said induction coil being (inherently) disposed in a layer of the magnetic head; a heat sink 30.
>
> As recited in claim 1, Yamada et al are silent regarding the heat sink being coplanar within the magnetic head with said electrical lead of said coil; however, this position was within the level of ordinary skill in the art.
>
> There is no invention in relocating known parts, when the functioning of the apparatus is not changed by the relocation. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed relative locations of parts in the course of routine experimentation and optimization and as a matter of design choice. The rationale is as follows: one of ordinary skill in the art would have been motivated to achieve proximity between heat sink and coil so as to radiate heat efficiently (see col. 5, lines 14-39) and to save a forming step by forming the heat sink layer in a same step as another layer is formed as taught by Yamada et al (see col. 5, lines 17-18; see also col. 8, lines 18-19).

As recited in independent claim 21, in addition to the above teachings, Yamada et al are silent regarding a hard disk drive comprising: at least one hard disk being adapted for rotary fly over said hard disk, and a magnetic head being formed on said slider body for writing data to said hard disk.

Official notice is taken of the fact that it was known in the art at the time the invention was made to use a magnetic head in a hard disk drive environment having the recited limitations.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the head of Yamada et al in the known hard disk drive environment. The rationale is as follows: one of ordinary skill in the art would have been motivated to dynamically record, store and reproduce data as is notoriously well known in the art.

Regarding independent claims 1 and 21, responsive hereto, Applicant has amended these claims to recite further limitations that are neither taught by nor obvious from the cited prior art. Additionally, Applicant respectfully traverses this ground of rejection as based upon the relocating of known parts, as is next discussed.

It is the function of the heat sink in Applicant's device, as well as in the prior art Yamada device to draw unwanted heat away from the magnetic head components. The location of the heat sink relative to the other structures within the head, and particularly the primary heat creating induction coil structure, has a direct effect on the effectiveness of the heat sink in removing the unwanted heat. As such, the functioning of the heat sink, and the functioning of the magnetic head itself is significantly affected by the location of the heat sink structure.

The act of relocation of the heat sink will therefore alter the operation of the magnetic head. In Japikse 181 F.2d 1019, 86 USPQ 70 (CCPA 1950 the issue was the position of the starting switch of a device, and it was held that the shifting of the position of the starting switch would not modify the operation of the device. In the present case, the location of the heat sink does affect the operation of the device, as, obviously, a heat sink that is located closer to a heat source within a device will operate more effectively than a heat sink that is located away from such a heat source. In addition, Applicant has added the further limitations into the independent

claims 1 and 2 that in addition to the heat sink structure being coplanar with the induction coil electrical leads, that the heat sink structure has a thickness that is equal to the thickness of the electrical leads. Applicant therefore respectfully submits that amended independent claims 1 and 21 recite limitations that are not obvious from the teachings of the prior art.

Regarding claim 2, the rejection states:

> "As recited in claim 2, Yamada et al show that said heat sink is comprised of copper.
>
> As recited in claim 2, Yamada et al are silent regarding whether said electrical lead is comprised of copper.
>
> Official notice is taken of the fact that a copper electrical lead was known in the art at the time the invention was made.
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the electrical lead out of copper as is notoriously well known in the art. The rationale is as follows: one of ordinary skill in the art would have been motivated to make the electrical lead out of copper in order to achieve high electrical and heat conductivity as is notoriously well known in the art."

Regarding dependent claim 2, Applicant submits that claim 2 is allowable in that it depends from an allowable base claim, independent claim 1.

Regarding claims 3 and 22 the rejection states:

> As recited in claims 3 and 22, Yamada et al show that said heat sink 30 is disposed at least in part upon (but not directly upon) said second magnetic pole 20 (see Fig. 6).

Regarding dependent claims 3 and 22, Applicant has amended these claims to recite the further limitation that the heat sink is disposed "directly" upon the magnetic pole. Based thereon, Applicant respectfully submits that dependent claims 3 and 22 are not obvious from the cited prior art.

Regarding claims 4 and 23, the rejection states:

> As recited in claims 4 and 23, Yamada et al show an insulation layer (including the insulation between pole 20 and coil 22, for example) that is disposed in part above said second magnetic pole.
>
> As recited in claims 4 and 23, Yamada et al are silent regarding the claimed locations of said electrical lead and said heat sink.

> There is no invention in relocating known parts, when the functioning of the apparatus is not changed by the relocation. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed relative locations of parts in the course of routine experimentation and optimization and as a matter of design choice. The rationale is as follows: one of ordinary skill in the art would have been motivated to achieve proximity between heat sink and coil so as to radiate heat efficiently (see col. 5, lines 14-39) and to save a forming step by forming the heat sink layer in a same step as another layer is formed as taught by Yamada et al (see col. 5, lines 17-18; see also col. 8, lines 18-19), and to save a forming step by forming the lead in a same step as the coil as is notoriously well known in the art.

With regard to dependent claims 4 and 23, Applicant submits that claims 4 and 23 are allowable in that they depend from an allowable base claim, independent claim 1.

Regarding claim 5, the rejection states:

> "As recited in claim 5, Yamada et al show that said heat sink 30 includes a first substantial portion (see right part of 30 in Fig. 5) that is disposed above said second magnetic pole 20, and another substantial portion (see left part of 30 in Fig. 5) that is disposed away from said second magnetic pole 20.

Regarding dependent claim 5 Applicant submits that claim 5 is allowable in that it depends from an allowable base claim, independent claim 1.

Regarding claim 6, the rejection states:

> As recited in claim 6, Yamada et al are silent regarding whether said heat sink is disposed away from an air bearing surface of the magnetic head.
>
> There is no invention in relocating known parts, when the functioning of the apparatus is not changed by the relocation. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed relative locations of parts in the course of routine experimentation and optimization and as a matter of design choice. The rationale is as follows: one of ordinary skill in the art would have been motivated to avoid destroying magnetically recorded bits of information by heating the medium as is known in the art."

Regarding dependent claim 6, Applicant submits that claim 6 is allowable in that it depends from an allowable base claim, independent claim 1.

Regarding claim 11, the rejection states:

> As recited in claim 11, Yamada et al are silent regarding whether said magnetic head is a longitudinal head.

> Official notice is taken of the fact that longitudinal heads and perpendicular heads were known in the art at the time the invention was made.
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the head of Yamada et al as a longitudinal head. The rationale is as follows: one of ordinary skill in the art would have been motivated to implement the head as a longitudinal head so as to enable recording on inexpensive magnetic media as is notoriously well known in the art.

Regarding dependent claim 11, Applicant submits that claim 11 is allowable in that it depends from an allowable base claim, independent claim 1.

Regarding claim 12, the rejection states:

> As recited in claim 12, Yamada et al are silent regarding whether said magnetic head is a perpendicular magnetic head.
>
> Official notice is taken of the fact that longitudinal heads and perpendicular heads were known in the art at the time the invention was made.
>
> It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the head of Yamada et al as a perpendicular magnetic head. The rationale is as follows: one of ordinary skill in the art would have been motivated to implement the head as a perpendicular magnetic head so as to enable recording on high density magnetic media as is notoriously well known in the art."

Regarding dependent claim 12, Applicant submits that claim 12 is allowable in that it depends from an allowable base claim, independent claim 1.

In paragraph 8 of the Office Action it is indicated that claims 7-10 and 24-27 are objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Responsive hereto, Applicant appreciates the indication of allowable subject matter. However, in that Applicant has amended independent claims 1 and 21 to be allowable, Applicant has not amended claims 7-10 and 24-27 to remove their dependency.

In paragraph 9 of the Office Action further prior art is made of record. Applicant has reviewed the further prior art and believes that the teachings thereof are at most cumulative to the teachings of the applied prior art.

Having responded to all of the paragraphs of the Office Action, and having amended the claims accordingly, Applicant respectfully submits that the Application is now in condition for allowance. Applicant therefore respectfully requests that a Notice of Allowance be forthcoming

at the Examiner's earliest opportunity. Should the Examiner have any questions or comments with regard to this amendment, a telephonic conference at the number set forth below is respectfully requested.

Respectfully submitted,

Dated: July 19, 2006

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CERTIFICATE OF MAILING (37 CFR 1.8(a))

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited on July 19, 2006 with the U.S. Postal Service as first class mail in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
Date: July 19, 2006

Patricia Beilmann